



## Indoor and outdoor airborne bacteria in child day-care centers in Edirne City (Turkey), seasonal distribution and influence of meteorological factors

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### Abstract:

This paper presents information about airborne mesophilic bacteria in the indoor and outdoor air of child day-care centers (CDCCs) in the city of Edirne, Turkey. Air samples were collected using the Petri plate gravitational settling method from the indoor and outdoor air of CDCCs. Counts of airborne bacteria were measured as colony forming units (CFU) collected by gravity onto Brain Heart Infusion Agar plates (with 5% sheep blood). Samples were taken monthly over a period of 12 months between January and December 2004. A total of 3,120 bacteria colonies were counted on 192 Petri plates. Four groups of culturable bacteria were identified: Gram-positive cocci, Gram-positive bacilli, endospore-forming Gram-positive bacilli, and Gram-negative bacteria. Airborne Gram-positive bacteria were the most abundant at more than 95% of the measured population. While Gram-positive cocci were more common in indoor environments, Gram-positive bacilli were more dominant in outdoor air. Bacteria commonly isolated from CDCCs were identified at a genus level. *Staphylococcus* (39.16%), *Bacillus* (18.46%), *Corynebacterium* (16.25%), and *Micrococcus* (7.21%) were dominant among the genera identified in the present study. The dominant genera identified in the day-care centers were *Staphylococcus*, *Micrococcus*, and *Corynebacterium* for indoor air and *Bacillus*, *Corynebacterium*, and *Staphylococcus* for outdoor air. *Staphylococcus*, *Streptococcus*, *Bacillus*, and *Corynebacterium* genera were found in samples from every month. Bacterial colony counts were compared by sampling location (indoors and outdoors), seasons, and meteorological factors. We found negative correlations between the monthly total outdoor bacterial counts and the sampling day's average relative humidity and average rainfall, and the monthly average rainfall. Fluctuations in bacterial counts in different seasons were observed.

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### Resource Description

#### Exposure : ☒

weather or climate related pathway by which climate change affects health

Air Pollution, Indoor Environment, Meteorological Factors, Precipitation, Temperature

**Air Pollution:** Interaction with Temperature, Other Air Pollution

**Air Pollution (other):** airborne bacteria

**Temperature:** Fluctuations

# Climate Change and Human Health Literature Portal

## **Geographic Feature:**

resource focuses on specific type of geography

Urban

## **Geographic Location:**

resource focuses on specific location

Non-United States

**Non-United States:** Europe

**European Region/Country:** European Country

**Other European Country :** Turkey

## **Health Impact:**

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

## **Mitigation/Adaptation:**

mitigation or adaptation strategy is a focus of resource

Adaptation

**Population of Concern:** A focus of content

## **Population of Concern:**

populations at particular risk or vulnerability to climate change impacts

Children

## **Resource Type:**

format or standard characteristic of resource

Research Article

## **Timescale:**

time period studied

Time Scale Unspecified

## **Vulnerability/Impact Assessment:**

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content